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Instructors of writing courses have used peer review in their classes for many years, but there is clear application in other disciplines, especially in honors courses in which instructors expect students to be actively engaged in the learning process and students are more likely to possess greater critical thinking skills. Indeed, because most honors courses are writing intensive, potentially all honors faculty are writing teachers.

Peer review in academia improves the quality of published material by providing constructive feedback to the authors prior to final publication. Innovators in education have applied this technique in the classroom to a variety of areas including student outcome assessment , group projects, oral presentations, and research papers , thereby allowing students to improve their skills based on the feedback they receive. Assessment of an anonymous peer review assignment in an undergraduate biomedical engineering course suggested that peer review improved grades and critical thinking skills and that it was the most favorable aspect of the course for some of the students . Not only does peer review increase writing quality, but others are advocating its use to increase active learning and make students accountable for the learning process . Peer review also allows students to interact more with each other and experience increased socialization while reducing the amount of time faculty spend on grading written assignments.

Four years ago, I began using peer review to help students improve the quality of their research papers in an honors introductory psychology class. Over the years, I collected data from 106 students to determine if they perceived peer review to be beneficial. In a subset of eighteen students, I also tested the hypothesis that peer review would result in significantly higher grades with each subsequent revision.

I assigned students to write an eight- to ten-page research paper in APA format on any psychological topic that I approved. Students were to have a clear hypothesis that was supported by critical interpretation of data from original research articles published in professional journals or other reliable sources. The grades on their papers accounted for approximately one third of their overall course grades. On the assigned due date of the first draft, students were asked to trade papers and make comments on them before the next class

period. My plan was to give student reviewers time to provide more thoughtful comments than editing the paper during class would allow.

After the initial round of peer review, reviewers returned the papers to their authors who then had about four days to prepare a second draft. The whole process was repeated with the recommendation that they trade papers with a different student than before. Students turned in the final draft along with the previous two drafts containing the comments and evaluations of their two reviewers. To help motivate students to provide sufficient feedback on each other's papers, I gave additional points for relevant and helpful comments but did not try to quantify the quality of the feedback given by their peers. In one section of eighteen students, a grader from another department who was blind to the purposes of the study also graded each draft with the same grading criteria that I used.

In the first several semesters that I used peer review, I provided general instructions for students to make comments on the writing style, grammar, support for the hypothesis, quality of references, etc. However, I found that students were making comments on only a few aspects of the paper (mostly grammar and formatting). To overcome this problem, two semesters ago I started having students apply the formal grading rubric that I use when grading the final draft. The rubric outlines the grading scale for the areas of introduction, sequencing, conclusion, content, accuracy of facts, credibility of sources, focus on topic, support for topic, formatting, and grammar and spelling. Each category was graded on a 20-point scale. For example, "Focus on Topic" was graded as shown below. Students made comments directly on the paper as well as on the grading rubric sheet.

20 Points	**15 Points**	**10 Points**	**0 Points**
There is one clear, well-focused topic. Main idea stands out and is supported by detailed information.	Main idea is clear but the supporting information is general.	Main idea is somewhat clear but there is a need for more supporting information.	The main idea is not clear. There is a seemingly random collection of information.

As I had anticipated, the overwhelming majority of students (88 of 102 students who answered the question) believed that they would receive a higher grade as a result of participating in the peer review process. When I asked them to rate how helpful it was on a scale from 1 (*not at all*) to 10 (*extremely helpful*), the mean score was 7.6 (SD = 2.1, n = 106). Not only did students perceive that peer review was helpful, but it also had a significant effect on their grades. On average, each draft of the research paper was significantly improved over the previous version. Using a paired-samples t-test, I found that the mean

percent score (out of 100) on the second draft (72.2%, SD = 18.1) was significantly higher than the first draft (66.2%, SD = 21.1), $t = 3.71$, $p = .002$. Moreover, scores on the final draft (76.9%, SD = 15.3) were significantly higher than scores on the second draft, $t = 2.64$, $p = .02$. Thus, the overall increase from the first to final draft was 10.7%, a full letter grade. When I graded the final drafts myself, I did not consider the quality of earlier drafts, nor did I read them except to note the comments that had been made by other students.

When asked what the weaknesses of their peers' papers were, students responded that grammar and formatting were the most frequent problems. On the other hand, the most frequently reported strengths were the selection of an interesting topic and good support of their hypothesis. General comments about the peer review process were positive and included statements such as, "I like evaluating someone else's paper, and then getting another week to revise. I thought that really helped my paper"; "My paper was proofread very well and gave me ideas for future papers from an outside source. Very good idea!"; and "This is the best format for peer review and ensuring editing by any teacher I've had thus far. Great system."

Consistent with Guildford's study, I found that students perceived peer review to be helpful in improving the quality of their papers and were likely to believe they would receive a higher grade as a result. Students also benefited from exposure to topics in psychology that I did not cover in class. Students felt they were contributing to the learning experience of others, and in the process they discovered ways they could improve their own papers.

One limitation of this study is that students could choose with whom to trade papers. Thus, having a friend grade their paper may result in less constructive criticism and could dampen the potential benefits of peer review. This could easily be overcome by using anonymous peer review, if desired. Another limitation is that, even though I encouraged students to make their first draft as complete and final as possible, they knew they would have later opportunities for revision, thus likely reducing the quality of the earlier drafts. To overcome this problem would require a "surprise" peer review assignment, which could be aversive to students.

Peer review seems especially effective when used in conjunction with a clearly defined grading rubric. Repeated use of the rubric helps students become familiar with my expectations for the different areas of the paper. Although each rubric category was given equal weight in calculation of the total grade, I am considering emphasizing some areas more than others by changing the relative weights. Overall, I feel the use of the grading rubric has increased the depth and breadth of student reviewer comments.

From my perspective, use of peer review saved me time that I would have spent on grading preliminary drafts that had grammatical and formatting errors. A general assessment of student comments suggested that peer review improved the readability of the papers and, in some cases, provided constructive criticism on the arguments made in the papers. Although I allowed students

to rewrite their papers one more time after the final draft, they rarely did (3 of 18 students one semester), a finding similar to Guilford who also reported receiving fewer requests for grade changes.

Thus, the peer review process reduced faculty work while helping students achieve a sense of satisfaction with their efforts. Probably even more importantly, the peer review process effectively engaged and motivated students. For some, it may have been the first opportunity to grade a research paper and experience what it's like to be a teacher.

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REFERENCES

Guilford, W. H. (2001). Teaching peer review and the process of scientific writing. *Advances in Physiology Education*, 25(3), 167-175.

Kern, V. M., Pernigotti, J. M., Calegaro, M. M., & Bento, M. (2002). *Peer review in engineering education: Speeding up learning, looking for a paradigm shift.* Paper presented at the Seventh International Conference on Engineering and Technology Education - INTERTECH, Santos, Spain.

Marcoulides, G. A., & Simkin, M. G. (1995). The consistency of peer review in student writing projects. *Journal of Education for Business*, 70(4), 220-223.

McGourty, J., Dominick, P., & Reilly, R. R. (1998). *Incorporating Student Peer Review and Feedback into the Assessment Process.* Paper presented at the Frontiers in Education, Tempe, AZ.

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